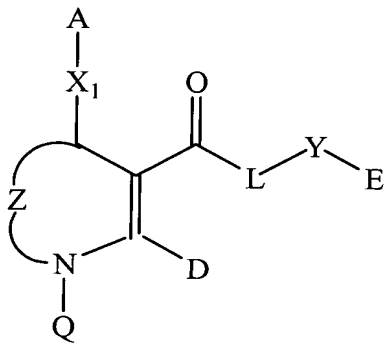
IN THE CLAIMS

The status of each claim is provided below.

Claims 1-41 (Canceled).

Claim 42 (Currently Amended) A dihydropyrimidine compound of the following formula (1), a tautomer thereof or a pharmaceutically acceptable salt thereof:

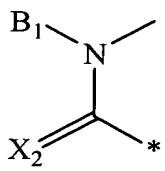


(1)

wherein

Z represents a group of the following formula (Z1), which is bonded to the nitrogen atom at the symbol "*": ~~symbol "*".~~

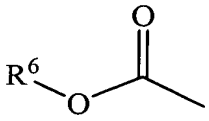
(Z1)



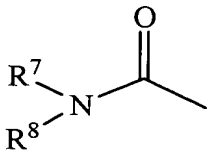
wherein

B_1 represents a hydrogen atom, a carboxy-lower alkyl group, a lower alkyloxycarbonyl-lower alkyl group or a group of the following general formula (3) or (4):

(3)



(4)



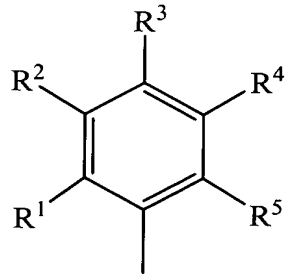
wherein

R^6 to R^8 each represent a hydrogen atom or a linear, branched or cyclic, saturated or unsaturated hydrocarbon group having 1 to 6 carbon atoms,

X_2 represents an oxygen atom or sulfur atom,

A represents a group of the following formula (2), or a substituted or unsubstituted 1-naphthyl, 2-naphthyl, indole-2-yl, indole-3-yl, thiophene-3-yl, thiophene-2-yl, furan-3-yl, furan-2-yl, pyridine-4-yl, pyridine-3-yl or pyridine-2-yl group wherein the substituents in these groups are those described later with reference to R^1 to R^5 in the formula (2):

(2)



wherein

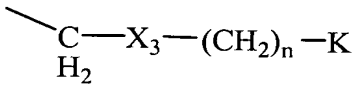
R^1, R^2, R^3, R^4 and R^5 may be the same or different from each other and each represent a hydrogen atom, a halogen atom, hydroxyl group, carboxyl group, amino group, cyano group, nitro group, a lower alkyl group, a lower alkoxyl group, a lower alkylamino group, a lower alkylthio group, a lower alkanoyl group, a lower alkoxycarbonyl group, a hydroxy-lower alkyl group, a hydroxy-lower alkoxyl group, a hydroxy-lower alkenyl group, a

halogeno-lower alkyl group, a halogeno-lower alkoxyl group, an amino-lower alkyl group, an amino-lower alkoxyl group, an amino-lower alkenyl group, a carboxy-lower alkyl group, a carboxy-lower alkoxyl group, a carboxy-lower alkenyl group, a benzyloxy group, a benzoyl or a pyridylcarbonylgroup,

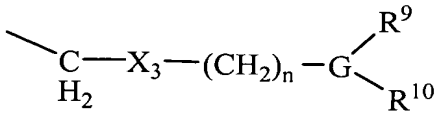
Q represents a hydrogen atom or a lower alkyl group,

D represents a hydrogen atom, a lower alkyl group, dimethoxymethyl group, cyano group, a benzyl group, a pyridylmethyl group, a hydroxy-lower alkyl group, a halogeno-lower alkyl group, an amino-lower alkyl group, a carboxy-lower alkyl group or a group of the following formula (5) or (6):

(5)



(6)



wherein

X_3 represents O, S or N-$R^{8'}$,

n represents an integer of 0 to 6,

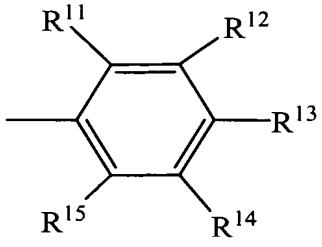
K in the formula (5) represents a hydrogen atom, a halogen atom, hydroxyl group, carboxyl group, amino group, cyano group, nitro group, azido group, a substituted or unsubstituted phenyl group or a substituted or unsubstituted heteroaryl group, wherein said heteroaryl group is selected from the group consisting of a pyridyl group, a furyl group and a thienyl group and wherein the substituents in these groups are those described with reference to R^1 to R^5 in the formula (2),

G in the formula (6) represents N or C-H,

wherein $R^{8'}$ to R^{10} may be the sauce or different from each other, and they each represent hydrogen atom, a linear, branched or cyclic, saturated or unsaturated hydrocarbon group having 1 to 6 carbon atoms, a substituted or unsubstituted phenyl group, a substituted or unsubstituted heteroaryl group wherein said heteroaryl group is selected from the group consisting of a pyridyl group, a furyl group and a thienyl group, a hydroxy-lower alkyl group, a hydroxy-lower alkenyl group, a halogeno-lower alkyl group, a halogeno-lower alkenyl group, an amino-lower alkyl group, an amino-lower alkenyl group, a carboxy-lower alkyl group, a carboxy-lower alkenyl group, a benzyl group, a pyridylmethyl group, cyano-lower alkyl group or a cyano-lower alkenyl group, and the chains may contain a hetero atom wherein the substituents in the substituted phenyl, pyridyl, furyl and thienyl groups of $R^{8'}$ are halogen atoms, alkyl groups and alkoxy groups and the substituents in the substituted phenyl, pyridyl, furyl and thienyl groups of R^9 and R^{10} are those described with reference to R^1 to R^5 in the formula (2), or R^9 and R^{10} may together form a ring selected from the group consisting of a cyclopentyl group, a cyclohexyl group, a piperidino-l-yl group, a piperidine-4-yl group, a pyrrolidine-l-yl group, a pyrrolidine-8-yl group, a piperidinone-1-yl group, a pyrrolidinone-1-yl group, a piperazine-1-yl group and a morpholine-4-yl group,

E represents a group of the following general formula (7) or a substituted or unsubstituted heteroaryl group, wherein said heteroaryl group is selected from the group consisting of thiophen-3-yl, thiophen-2-yl, furan-3-yl, furan-2-yl, pyridine-4-yl, pyridine-3-yl, pyridine-2-yl and imidazol-1-yl wherein the substitutnt is selected from the group consisting of halogens, lower alkyl groups and alkoxyl groups:

(7)



wherein

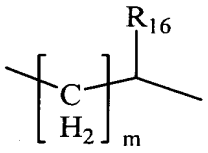
R^{11}, R^{12}, R^{13}, R^{14} and R^{15} may be the same or different from each other and each represent a hydrogen atom, a halogen atom, hydroxyl group, carboxyl group, amino group, cyano group, nitro group, a lower alkyl group, a lower alkoxyl group, a lower alkylamino group, a lower alkylthio group, a lower alkanoyl group, a hydroxy-lower alkyl group, a hydroxy-lower alkoxyl group, a hydroxy-lower alkenyl group, a halogeno-lower alkyl group, a halogeno-lower alkoxyl group, an amino-lower alkyl group, an amino-lower alkoxyl group, an amino-lower alkenyl group, a carboxy-lower alkyl group, a carboxy-lower alkoxyl group, a carboxy-lower alkenyl group, benzyl group, benzyloxy group, a lower alkoxycarbonyl group, benzoyl, pyridylcarbonyl group, a substituted or unsubstituted phenyl group, a substituted or unsubstituted heteroaryl group wherein said heteroaryl group is selected from the group consisting of a pyridyl group, a furyl group and a thienyl group, or cyclopentyl group, cyclohexyl group, piperidyl group, pyrrolidinyl group and piperazinyl group wherein the substituents in the substituted phenyl, pyridyl, furyl and thienyl groups are halogen atoms, alkyl groups and alkoxyl groups,

X_1 represents an interatomic bond

L represents >N-J wherein J represents a hydrogen atom, a lower alkyl group, a carboxy-lower alkyl group or a lower alkyloxycarbonyl-lower alkyl group,

Y represents a saturated or unsaturated linear hydrocarbon group having 1 to 6 carbon atoms, which may contain a hetero atom in the group thereof, or a group of the following general formula (8):

(8)



wherein

R_{16} represents a substituted or unsubstituted phenyl group, a substituted or unsubstituted heteroaryl group, wherein said heteroaryl group is selected from the group consisting of pyridyl, furyl and thienyl groups wherein the substituent is selected from the group consisting of halogens, lower alkyl groups and alkoxyl groups, and

m represents an integer of 0 to 5.

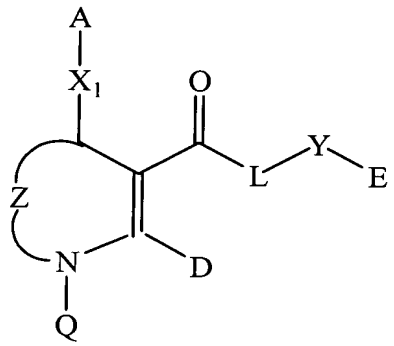
43. (Previously Presented) The dihydropyrimidine compound, tautomer thereof or pharmaceutically acceptable salt thereof according to claim 42, wherein B_1 represents a hydrogen atom.

44. (Previously Presented) The dihydropyrimidine compound, tautomer thereof or pharmaceutically acceptable salt thereof according to claim 42, wherein B_1 represents a group of general formula (3).

45. (Previously Presented) The dihydropyrimidine compound, tautomer thereof or pharmaceutically acceptable salt thereof according to claim 42, wherein B_1 represents a group of general formula (4).

46. (Previously Presented) The dihydropyrimidine compound, tautomer thereof or pharmaceutically acceptable salt thereof according to claim 42, wherein B_1 represents a carboxy-lower alkyl group or a lower alkyloxycarbonyl-lower alkyl group.

47. (Currently Amended) A dihydropyrimidine compound of the following formula (1), a tautomer thereof or a pharmaceutically acceptable salt thereof:

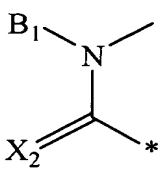


(1)

wherein

Z represents a group of the following formula (Zl), which is bonded to the nitrogen atom at the symbol "*": ~~symbol "*".~~

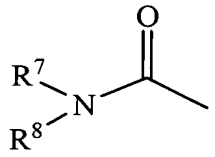
(Z1)



wherein

B_1 represents a hydrogen atom, a carboxy-lower alkyl group, a lower alkyloxycarbonyl-lower alkyl group or a group of the following general formula (4):

(4)



wherein

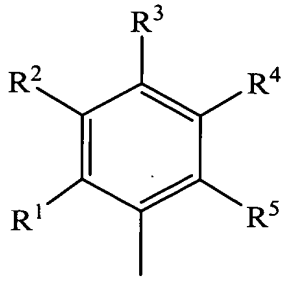
R^7 represents a hydrogen atom, a linear, branched or cyclic, saturated or unsaturated hydrocarbon group having 1 to 6 carbon atoms, and

R^8 represents a benzyl group, 3-phenylpxopyl group, 3-phenyl-2-propene-1-yl group, 3,3-diphenylpropyl group, 3-(pyridine-2-yl)propyl group, 3-(pyridine-2-yl)-2-propene-l-yl group, 2-(2-methoxyphenyl) ethyl group, 2-(4-methoxyphenyl) ethyl group, 2-(4-hydroxyphenyl) ethyl group, 2-phenoxyethyl group, 2-(pyridine-4-yl)ethyl group or 4-phenyl butyl group,

X_2 represents an oxygen atom or sulfur atom,

A represents a group of the following formula (2), or a substituted or unsubstituted 1-naphthyl, 2-naphthyl, indole-2-yl indole-3-yl, thiophene-3-yl, thiophene-2-yl, furan-3-yl, furan-2-yl, pyridine-4-yl, pyridine-3-yl or pyridine-2-yl group wherein the substituents in these groups are those described below with reference to R^1 to R^5 in the formula (2):

(2)



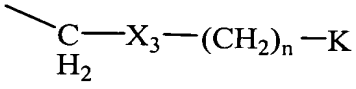
wherein

R^1, R^2, R^3, R^4 and R^5 may be the same or different from each other and each represent a hydrogen atom, a halogen atom, hydroxyl group, carboxyl group, amino group, cyano group, nitro group, a lower alkyl group, a lower alkoxyl group, a lower alkylamino group, a lower alkylthio group, a lower alkanoyl group, a lower alkoxycarbonyl group, a hydroxy-lower alkyl group, a hydroxy-lower alkoxyl group, a hydroxy-lower alkenyl group, a halogeno-lower alkyl group, a halogeno-lower alkoxyl group, an amino-lower alkyl group, an amino-lower alkoxyl group, an amino-lower alkenyl group, a carboxy-lower alkyl group, a carboxy-lower alkoxyl group, a carboxy-lower alkenyl group, a benzyloxy group, a benzoyl or a pyridylcarbonyl group,

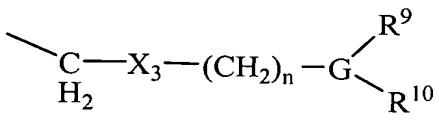
Q represents a hydrogen atom or a lower alkyl group,

D represents a hydrogen atom, a lower alkyl group, dimethoxymethyl group, cyano group, a benzyl group, a pyridylmethyl group, a hydroxy-lower alkyl group, a halogeno-lower alkyl group, an amino-lower alkyl group, a carboxy-lower alkyl group or a group of the following formula (5) or (6):

(5)



(6)



wherein

X_3 represents O, S or N-$R^{8'}$,

n represents an integer of 0 to 6,

K in the formula (5) represents a hydrogen atom, a halogen atom, hydroxyl group, carboxyl group, amino group, cyano group, nitro group, azido group, a substituted or unsubstituted phenyl group or a substituted or unsubstituted heteroaryl group, wherein said heteroaryl group is selected from the group consisting of a pyridyl group, a furyl group and a thienyl group and wherein the substituents in these groups are those described with reference to R^1 to R^5 in the formula (2),

G in the formula (6) represents N or C-H,

wherein $R^{8'}$ to R^{10} may be the same or different from each other, and they each represent hydrogen atom, a linear, branched or cyclic, saturated or unsaturated hydrocarbon group having 1 to 6 carbon atoms, a substituted or unsubstituted phenyl group, a substituted or unsubstituted heteroaryl group wherein said heteroary group is selected from the group consisting of a pyridyl group, a furyl group and a thienyl group, a hydroxy-lower alkyl group, a hydroxy-lower alkenyl group, a halogeno-lower alkyl group, a halogeno-lower alkenyl group, an amino-lower alkyl group, an amino-lower alkenyl group, a carboxy-lower alkyl group, a carboxy-lower alkenyl group, a benzyl group, a pyridylmethyl group, cyano-lower alkyl group or a cyano-lower alkenyl group, and the chains may contain a hetero atom wherein the substituents in the substituted phenyl, pyridyl, furyl and thienyl groups of $R^{8'}$ are halogen atoms, alkyl groups and alkoxy groups and the substituents in the substituted phenyl, pyridyl, furyl and thienyl groups of R^9 and R^{10} are those described with reference to R^1 to R^5 in the formula (2), or R^9 and R^{10} may together form a ring selected from the group consisting of a cyclopentyl group, a cyclohexyl group, a piperidine-1-yl group, a piperidine-4-yl group,

a pyrrolidine-1-yl group, a pyrrolidine-8-yl group, a piperidinone-1-yl group, a pyrrolidinone-1-yl group, a piperazine-1-yl group and a morpholine-4-yl group,

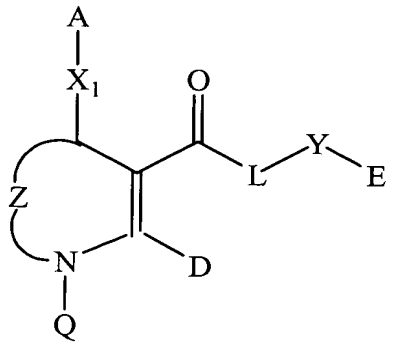
E represents a hydrogen atom,

X_1 represents an interatomic bond,

L represents oxygen atom, and

Y represents an interatomic bond.

48. (Currently Amended) A dihydropyrimidine compound of the following formula (1), a tautomer thereof or a pharmaceutically acceptable salt thereof:

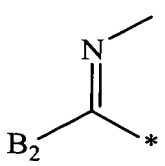


(1)

wherein

Z represents a group of the following formula (Z2), which is bonded to the nitrogen atom at the symbol "*": ~~symbol "*".~~

(Z2)



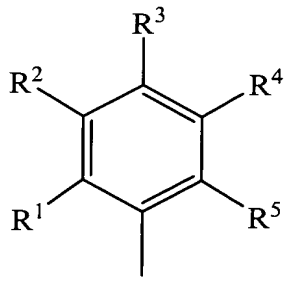
wherein

B_2 represents an amino group, a lower alkyl group, a lower alkylamino group, a lower alkylthio group, benzyl group, a pyridylmethyl group, a hydroxy-lower alkyl group, a halogeno-lower alkyl group, unsubstituted heteroaryl group, wherein said heteroaryl group is selected from the group consisting of a pyridyl group, a furyl group and a thienyl group, and wherein the substituents in the substituted phenyl, pyridyl, furyl and thienyl groups are halogen atoms, hydroxyl group, carboxyl group, amino group, cyano group, nitro group, lower alkyl groups, lower alkoxyl groups, halogeno-lower alkyl groups, hydroxyl-lower alkyl groups and lower-alkoxycarbonyl groups,

X_2 represents an oxygen atom or sulfur atom,

A represents a group of the following formula (2), or a substituted or unsubstituted 1-naphthyl, 2-naphthyl, indole-2-yl, indole-3-yl, thiophene-3-yl, thiophene-2-yl, furan-3-yl, furan-2-yl, pyridine-4-yl, pyridine-3-yl or pyridine-2-yl group wherein the substituents in these groups are those described below with reference to R^1 to R^5 in the formula (2):

(2)



wherein

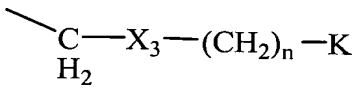
R^1, R^2, R^3, R^4 and R^5 may be the same or different from each other and each represent a hydrogen atom, a halogen atom, hydroxyl group, carboxyl group, amino group, cyano group, nitro group, a lower alkyl group, a lower alkoxyl group, a lower alkylamino group, a lower alkylthio group, a lower alkanoyl group, a lower alkoxycarbonyl group, a hydroxy-lower alkyl group, a hydroxy-lower alkoxyl group, a hydroxy-lower alkenyl group, a

halogeno-lower alkyl group, a halogeno-lower alkoxyl group, an amino-lower alkyl group, an amino-lower alkoxyl group, an amino-lower alkenyl group, a carboxy-lower alkyl group, a carboxy-lower alkoxyl group, a carboxy-lower alkenyl group, a benzyloxy group, a benzoyl or a pyridylcarbonyl group,

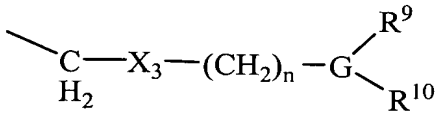
Q represents a hydrogen atom or a lower alkyl group,

D represents a hydrogen atom, a lower alkyl group, dimethoxymethyl group, cyano group, a benzyl group, a pyridylmethyl group, a hydroxy-lower alkyl group, a halogeno-lower alkyl group, an amino-lower alkyl group, a carboxy-lower alkyl group or a group of the following formula (5) or (6):

(5)



(6)



wherein

X_3 represents O, S or N-$R^{8'}$,

n represents an integer of 0 to 6,

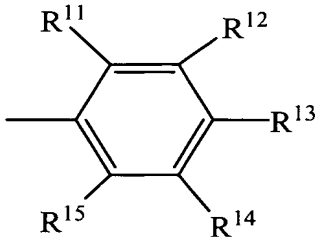
K in the formula (5) represents a hydrogen atom, a halogen atom, hydroxyl group, carboxyl group, amino group, cyano group, nitro group, azido group, a substituted or unsubstituted phenyl group or a substituted or unsubstituted heteroaryl group, wherein said heteroaryl group is selected from the group consisting of a pyridyl group, a furyl group and a thienyl group and wherein the substituents in these groups are those described with reference to R^1 to R^5 in the formula (2),

G in the formula (6) represents N or C-H,

wherein $R^{8'}$ to R^{10} may be the same or different from each other, and they each represent hydrogen atom, a linear, branched or cyclic, saturated or unsaturated hydrocarbon group having 1 to 6 carbon atoms, a substituted or unsubstituted phenyl group, a substituted or unsubstituted heteroaryl group wherein said heteroaryl group is selected from the group consisting of a pyridyl group, a furyl group and a thienyl group, a hydroxy-lower alkyl group, a hydroxy-lower alkenyl group, a halogeno-lower alkyl group, a halogeno-lower alkenyl group, an amino-lower alkyl group, an amino-lower alkenyl group, a carboxy-lower alkyl group, a carboxy-lower alkenyl group, a benzyl group, a pyridylmethyl group, cyano-lower alkyl group or a cyano-lower alkenyl group, and the chains may contain a hetero atom wherein the substituents in the substituted phenyl, pyridyl, furyl and thienyl groups of $R^{8'}$ are halogen atoms, alkyl groups and alkoxy groups and the substituents in the substituted phenyl, pyridyl, furyl and thienyl groups of R^9 and R^{10} are those described with reference to R^1 to R^5 in the formula (2), or R^9 and R^{10} may together form a ring selected from the group consisting of a cyclopentyl group, a cyclohexyl group, a piperidine-1-yl group, a piperidine-4-yl group, a pyrrolidine-1-yl group, a pyrrolidine-3-yl group, a piperidinone-l-yl group, a pyrrolidinone-1-yl group, a piperazine-1-yl group and a morpholine-4-yl group,

E represents a group of the following general formula (7) or a substituted or unsubstituted heteroaryl group, wherein said heteroaryl group is selected from the group consisting of thiophen-3-yl, thiophen-2-yl, furan-3-yl, furan-2-yl, pyridine-4-yl, pyridine-3-yl, pyridine-2-yl and imidazol-l-yl wherein the substituent is selected from the group consisting of halogens, lower alkyl groups and alkoxyl groups:

(7)



wherein

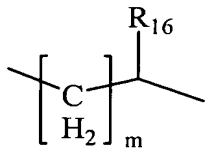
R^{11}, R^{12}, R^{13}, R^{14} and R^{15} may be the same or different from each other and each represent a hydrogen atom, a halogen atom, hydroxyl group, carboxyl group, amino group, cyano group, nitro group, a lower alkyl group, a lower alkoxyl group, a lower alkylamino group, a lower alkylthio group, a lower alkanoyl group, a hydroxy lower alkyl group, a hydroxy-lower alkoxyl group, a hydroxy-lower alkenyl group, a halogeno-lower alkyl group, a halogeno-lower alkoxyl group, an amino-lower alkyl group, an amino-lower alkoxyl group, an amino-lower alkenyl group, a carboxy lower alkyl group, a carboxy-lower alkoxyl group, a carboxy-lower alkenyl group, benzyl group, benzyloxy group, a lower alkoxycarbonyl group, benzoyl, pyridylcarbonyl group, a substituted or unsubstituted phenyl group, a substituted or unsubstituted heteroaryl group wherein said heteroaryl group is selected from the group consisting of a pyridyl group, a furyl group and a thienyl group, or cyclopentyl group, cyclohexyl group, piperidyl group, pyrrolidinyl group and piperazinyl group wherein the substituents in the substituted phenyl, pyridyl, furyl and thienyl groups are halogen atoms, alkyl groups and alkoxyl groups,

X_1 represents an interatomic bond

L represents >N-J wherein J represents a hydrogen atom, a lower alkyl group, a carboxy-lower alkyl group or a lower alkyloxycarbonyl-lower alkyl group,

Y represents a saturated or unsaturated linear hydrocarbon group having 1 to 6 carbon atoms, which may contain a hetero atom in the group thereof, or a group of the following general formula (8):

(8)



wherein

R_{16} represents a substituted or unsubstituted phenyl group, a substituted or unsubstituted heteroaryl group, wherein said heteroaryl group is selected from the group consisting of pyridyl, furyl and thienyl groups wherein the substituent is selected from the group consisting of halogens, lower alkyl groups and alkoxyl groups, and

m represents an integer of 0 to 5.

49. (Previously Presented) The dihydropyrimidine compound, tautomer thereof or pharmaceutically acceptable salt thereof according to claim 48, wherein B_2 is selected from the group consisting of substituted or unsubstituted phenyl groups, a substituted or unsubstituted furyl groups and substituted or unsubstituted thienyl groups.

50. (Previously Presented) The dihydropyrimidine compound, tautomer thereof or pharmaceutically acceptable salt thereof according to claim 48, wherein B_2 represents an amino group, or a lower alkylamino group.

51. (Previously Presented) The dihydropyrimidine compound, tautomer thereof or pharmaceutically acceptable salt thereof according to claim 48, wherein B_2 represents a lower alkylthio group.

52. (Previously Presented) The dihydropyrimidine compound, tautomer thereof or pharmaceutically acceptable salt thereof according to claim 48, wherein B_2 represents a lower alkyl group.

53. (Currently Amended) A pharmaceutical composition comprising a dihydropyrimidine compound, tautomer thereof and pharmaceutically acceptable salt thereof according to claim 42 and one or more adjuvants ~~as an active ingredient~~.

54. (Currently Amended) A pharmaceutical composition comprising a dihydropyrimidine compound, tautomer thereof and pharmaceutically acceptable salt thereof according to claim 47 and one or more adjuvants ~~as an active ingredient~~.

55. (Currently Amended) A pharmaceutical composition comprising a dihydropyrimidine compound, tautomer thereof and pharmaceutically acceptable salt thereof according to claim 48 and one or more adjuvants ~~as an active ingredient~~.

Claims 56-61: Canceled.

62. (New) A method of antagonizing N-type calcium channels, comprising contacting N-type calcium channels with an effective amount of the compound of claim 42.

63. (New) A method of antagonizing N-type calcium channels, comprising contacting N-type calcium channels with an effective amount of the compound of claim 47.

64. (New) A method of antagonizing N-type calcium channels, comprising contacting N-type calcium channels with an effective amount of the compound of claim 48.

SUPPORT FOR THE AMENDMENTS

Claims 42, 47, and 48 have been amended to correct a typographical error.

Claims 53-55 have been amended to specify an adjuvant. That amendment is supported by the specification at page 30, line 16.

Newly-added Claims 62-64 are supported by the specification at page 4.

No new matter is believed to have been added to the present application by the amendments submitted above.